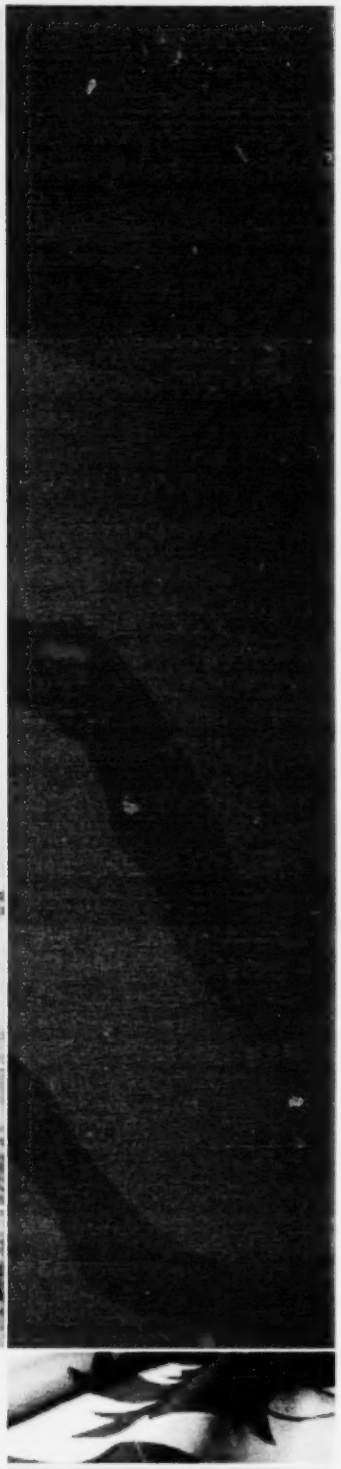
Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada

Water

MONITORING BUSINESS PLAN



NORTHWEST TERRITORIES
AND NUNAVUT

Northern Affairs Program
Water Management

Canada

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1. INTRODUCTION

The Department of Indian Affairs and Northern Development (DIAND) has, as one of its functions in the north, the mandate to collect, analyse, interpret and disseminate information about the water resources of the Northwest Territories and Nunavut. To guide the Department in carrying out this function in the most efficient and effective manner, this business plan was developed to clearly identify our goals and objectives for collecting water information, confirming who our clients are and their needs for monitoring data, and setting a course to ensure these needs are met.

The strategic planning process used to develop this plan is illustrated in Figure 1. The process starts with an overview of the opportunities and challenges of delivering a comprehensive water monitoring program in the NWT and Nunavut. This is followed with an assessment of our current delivery of water monitoring programs in the Northwest Territories and Nunavut.

Where are we now?

- Assess current situation

Where do we want to be?

- Consider expected context
- Consider mission and values
- Consider clients' needs
- Set strategic goals

How do we get there?

- Design strategies
- Write action plan

How do we know we are there?

Figure 1. Strategic Planning Process

The Department's mission and values as they relate to water monitoring are presented, as well as who our clients are and their needs, and a statement of what we want the water monitoring program to be in the next three to five years. Strategic goals are then established, based on this understanding, to meet our water monitoring objectives. Specific strategies and an action plan are presented which, when implemented, will achieve the overall goals and objectives of the business plan. Finally, a feedback mechanism will be developed to regularly assess the success of the program, and make any necessary modifications.

This business plan will be used to guide the development of operational plans for water monitoring in the Northwest Territories and Nunavut.

2. THE OPPORTUNITY AND THE CHALLENGE

Managing Canada's northern water resources is a large responsibility. Consider the following facts from the *National Atlas of Canada*. Just over one third of Canada's land area is located in the Northwest Territories and Nunavut. The Northwest Territories alone contains 9.2% of the world's total of freshwater. The drainage basins for the Arctic Ocean and Hudson Bay total over 7 million km^2, or approximately 80% of Canada's land and water area.

2.1 The Northern Economy

The cornerstones of the northern economy are government, renewable resources and non-renewable resource industries. The Northwest Territories and Nunavut both have young and growing populations compared to the rest of Canada. Building a solid and sustainable economy and providing employment in the north is going to be crucial to take advantage of and support this rapidly growing work force.

2.1.1 Importance of Subsistence Lifestyles

The pursuit of a traditional lifestyle by many Aboriginal residents is more than just hunting, fishing and trapping, it constitutes a whole way of life. Land and water are vital parts of northern Aboriginal identity and culture. A traditional lifestyle is dependent on the preservation of healthy aquatic ecosystems in the North. In addition to the cultural significance of subsistence hunting and fishing, traditional country foods also provide a healthy, nutritious, less expensive alternative to food from the south.

2.1.2 Mining and Oil and Gas Industry

The discovery of diamonds in the Slave Geological Province in the early 1990s spurred the largest mineral staking rush in Canadian history, and has resulted in the opening of the BHP Ekati and Diavik diamond mines, contributing significant economic benefits to the Northwest Territories and Canada. The Bathurst Port and Road project has now entered the approval process and if completed will considerably affect Nunavut's resource development potential.

Snap Lake, Kennady Lake and Jericho are other promising diamond mines. There are also some important gold discoveries taking place in Nunavut. Over the next five years, it is anticipated that several new mines will become operational in the Northwest Territories and Nunavut. Figure 2 shows active mines and areas of high development potential in the Northwest Territories and Nunavut.

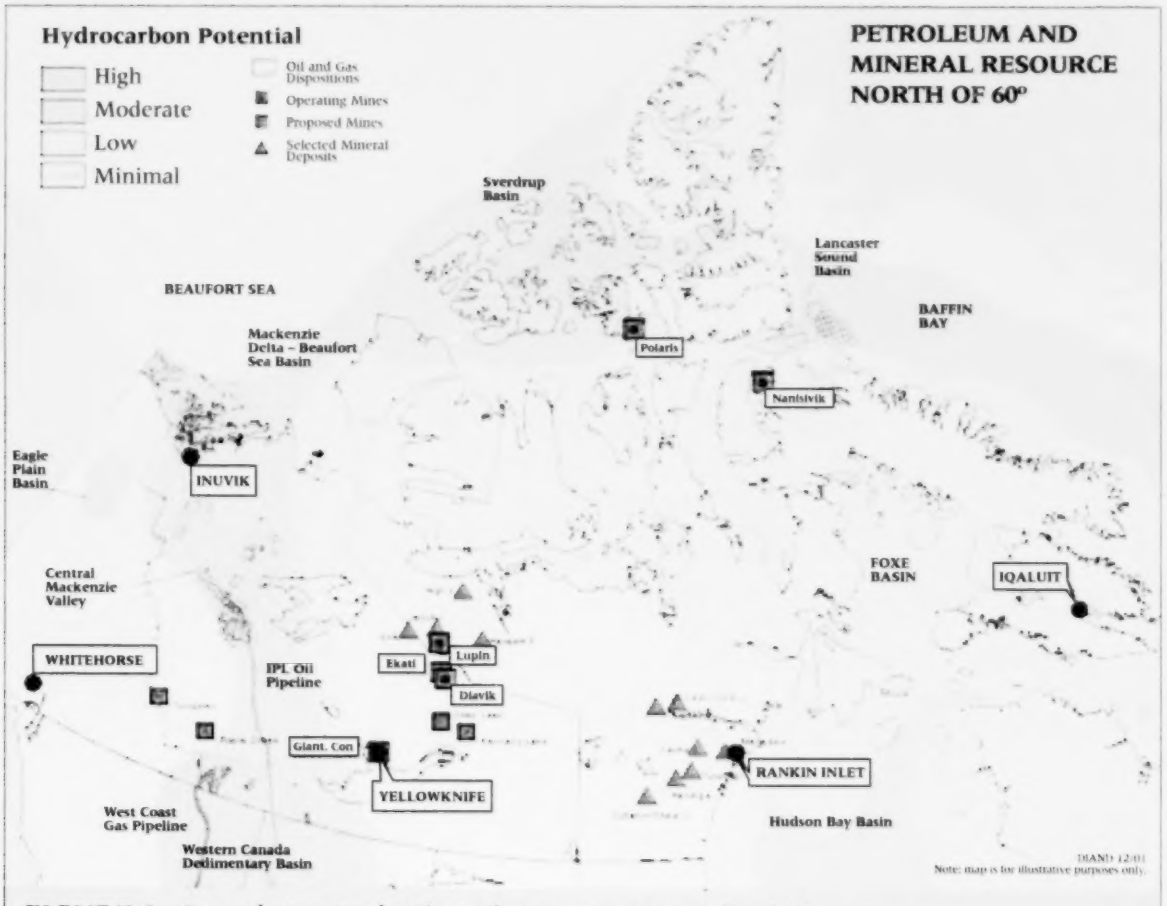

FIGURE 2. Petroleum and Mineral Resources North of 60

Oil and gas exploration and drilling activity is occurring in the Cameron Hills area, near Fort Liard, and in the Mackenzie River delta. Increased exploration and development of oil and gas properties across the north is expected, as well as applications for the construction of a Mackenzie Valley pipeline.

Ensuring that these new mines and oil and gas developments proceed through the construction, production and ultimately closure stages depends partially on a predictable and efficient environmental and regulatory review process. A good knowledge of water resources is necessary for these reviews.

The mineral exploration and development boom holds the promise of much needed jobs and growth for northerners. Unlike earlier anticipated booms, the long term investment that will result from the diamond mines, along with well managed resources to support other mineral and oil and gas developments, will result in jobs for the rapidly growing young northern population, increased northern economic self reliance and sustained economic growth for Canada.

2.2 The Evolving North

The water management regime in the North is changing dramatically: there are more boards, committees and advisory bodies; regulatory issues are more complex; there are higher public expectations; there are more inter-jurisdictional boundary issues; and there are new agreements on aboriginal rights related to water resources.

2.2.1 Nunavut

The Nunavut Land Claims Agreement and *Nunavut Waters and Nunavut Surface Rights Tribunal Act* establish a Nunavut Water Board (NWB), which has responsibilities and powers over the regulation and use of water in the Nunavut Settlement Area.

The Agreement recognizes two distinct types of monitoring: 1) Project Monitoring; and 2) General Monitoring. Project monitoring can result from a Nunavut Impact Review Board (NIRB) or NWB water use licencing decision and may require the licencee to undertake specific monitoring programs. General Monitoring addresses information on the long term state and health of the ecosystem and socio-economic environment in the Nunavut Settlement Area.

Section 20.3.1 and 20.3.2 of Nunavut Land Claims Agreement states that water quality/quantity flowing onto Inuit Owned Land can not be substantially affected, and if so, that Inuit have the right to be compensated. The Nunavut Water Board may be called upon to make a determination for compensation. If this happens, the Nunavut Water Board may look to the water use applicant, relevant Inuit organization, and/or the Department for the provision of water quality/quantity data.

In summary, other than the responsibilities of the Water Board, water management in Nunavut, including monitoring, continue to be a DIAND responsibility. In order to regulate water use properly, the Nunavut Water Board will depend largely on the availability of information on water resources.

2.2.2 Northwest Territories

Land claim settlements in the Northwest Territories, including the Inuvialuit Final Agreement, the Gwich'in Comprehensive Land Claim Agreement, and the Sahtu Dene and Metis Comprehensive Land Claim Agreement, are changing the resource management regime in the

Mackenzie Valley. These Agreements ensure a greater role for Aboriginal peoples through the establishment of new land and water management boards within the settlement areas. To establish these boards and to provide for a resource management system within the Mackenzie Valley that is consistent with land claims, the *Mackenzie Valley Resource Management Act* (MVRMA) was enacted in 1999.

Under the MVRMA another new public board, the Mackenzie Valley Land and Water Board, was established to regulate land and water uses in unsettled land claim areas and for developments that cross settlement areas. In the Inuvialuit Settlement Area, water-rights allocations continue to be carried out through the Northwest Territories Water Board.

An important provision in the claim agreements is the aboriginal right to use waters that are on or flow through claimant lands and the requirement that these waters remain substantially unaltered in quality, quantity, and rate of flow. Monitoring requirements for disputes arising from these provisions may require project specific monitoring to be carried out.

2.2.3 Transboundary Agreements

The Mackenzie River Basin Transboundary Waters Master Agreement, among DIAND, Environment Canada, Alberta, Saskatchewan, British Columbia, the Northwest Territories and Yukon, was completed on August 5,1997. The agreement addresses transboundary water management issues such as flows, flow regulation, and water quality at jurisdictional boundary crossing points in the Mackenzie River Basin, and establishes a permanent board to implement the provisions of the agreement. Provisions are included in the master agreement for bilateral water management agreements between adjoining jurisdictions. A Northwest Territories – Yukon bilateral agreement was completed in February 2002 and work is progressing toward a Northwest Territories – Alberta bilateral agreement.

The Master Agreement endorses the ecosystem approach to management of the Mackenzie basin water resource, which focuses on the need to maintain the integrity of the aquatic ecosystem over the basin as a whole through setting quantitative objectives for water quality and quantity parameters at boundary crossing points.

The Governments of the Northwest Territories and Nunavut have indicated a desire to develop an agreement on transboundary issues. One of the priorities of such an agreement may be shared interests in the Coppermine River basin; extensive mineral development in the headwaters of the Coppermine basin make water monitoring necessary to measure effects and protect the integrity of the water resource.

2.2.4 Climate Change

A major study of impacts of climate change on the Mackenzie Basin was conducted by Environment Canada from 1990 to 1996. DIAND participated in this study. The results show that the north is particularly susceptible to climate change. Long term water monitoring will help in understanding and adapting to impacts from climate change.

The federal government and the governments of the Northwest Territories and Nunavut are committed to reducing greenhouse gases. Considering this commitment, the high costs of transporting fuel, and the potential for hydro electrical development in the North, it is quite probable that small scale hydro-electrical development may be a significant source of power production in the Northwest Territories and Nunavut in the future. Significant amounts of hydrometric data are required to determine the feasibility and assess the impacts of this type of project.

3. THE STATUS OF OUR BUSINESS

3.1 Mandate

DIAND's overall responsibility for water monitoring is set out in section 5 of the *DIAND Act*, which given the Minister of DIAND "provincial-type" responsibilities for water resources. The federal government has ownership of the water resource and other natural resources in the Northwest Territories and Nunavut. Water use and waste disposal are controlled through a regulatory process established under the *Northwest Territories Waters Act*, *the Mackenzie Valley Resources Management Act (MVRMA)* and the *Nunavut Waters and Surface Rights Tribunal Act*. Water use and waste disposal in or near water must be either licensed by water boards/land and water boards or authorized by regulation. According to the Acts, the water boards are to provide for the conservation, development, and utilization of waters in a manner that will provide the optimum benefit for all Canadians and for the residents of the Northwest Territories and Nunavut in particular.

In addition to its main mandate under the *DIAND Act* and water legislation, DIAND has responsibilities under the *Canadian Environmental Assessment Act* and the *Mackenzie Valley Resources Management Act*. Obligations also stem from the Inuvialuit, Nunavut, Gwich'in and Sahtu land claim agreements. DIAND and the water licensing boards in the Northwest Territories and Nunavut must possess a comprehensive knowledge of water resources in order to meet all their water related responsibilities and obligations.

3.2 Background

As part of a national effort to co-ordinate the collection of water quantity information, DIAND, in its quasi-provincial role of water manager for the Northwest Territories, entered into cost-sharing agreements with the federal Department of the Environment (DOE) in 1975 for collecting water quantity data and in 1995 for collecting water quality data. From the mid-1980s to late-1990s, numerous reviews and adjustments to the water monitoring programs increased the efficiency of program delivery.

In 1990 the Auditor General reported that DIAND was not collecting enough data to manage water resources in the north. The Auditor General's findings coincided with increasing client needs for water monitoring data. The federal government's response was in part that more monitoring would be conducted through the Arctic Environmental Strategy (AES). The AES, a component of Canada's Green Plan, was a six-year program that ended in 1997. The AES established a water quality monitoring network and the capacity to respond to local water quality related issues. During this time, AES funding was able to offset the decrease in departmental A-base resources, and allowed DIAND to fulfill its responsibilities.

After the sunset of AES in 1997, it became obvious that down-sizing coupled with the effect of inflation had severely affected DIAND's capacity to deliver the required level of water monitoring within existing departmental A-base resources. In 1998 in the Northwest Territories and Nunavut, the buying capacity of the DIAND water monitoring program had decreased to one third of what it was in 1990.

While the water monitoring program was reduced during the1990s as a result of budget reductions, it was also affected by other pressures. Environmental assessment of development proposals required detailed information and a comprehensive understanding of water resources and the aquatic environment. Better knowledge of mineral potential in the Northwest Territories and Nunavut and improved mining techniques resulted in a dramatic increase in mineral exploration (the diamond rush) and the potential for several new mines. For example, the development of a number of diamond mines raised concerns about the effects of multiple developments on the Coppermine River drainage basin.

The trend toward greater expectations on the number and sophistication of outputs from the water monitoring programs is likely to be amplified in the future. To meet our current mandate and client requirements, there is a need for sound strategies and plans for the water monitoring programs.

3.3 Water Monitoring Business Today

Water monitoring in the Northwest Territories and Nunavut today is conducted under the following five business lines:

- water quality/quantity baseline network
- specific water monitoring studies
- applied research
- interpretation and provision of information
- partnerships and public participation

The first three business lines are characterized in Figure 3 by their standardized budgets since 1978. The ***water quality/quantity baseline network*** is a long-term, stable source of high quality data. The network is adjusted when results from the other two input lines indicate that a change is required.

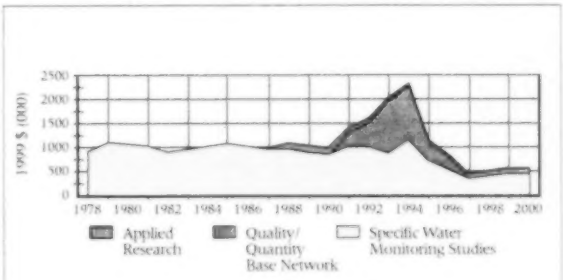

Figure 3. Inputs to Business Lines

The ***specific water monitoring studies*** business line is a flexible and capitally intensive program to obtain information required to address particular issues or community concerns such as those raised in environmental assessments and water licencing hearings.

The ***applied research*** business line is a study program that advances the knowledge of northern water resources.

The products from these three business lines is improved through the ***Partnerships and Public Participation*** business line and outputs are produced through the ***Interpretation and Provision of Information*** business line. A more detailed description of the type of activities conducted under each of the business lines follows.

3.3.1 Water Quality/Quantity Baseline Network
The base network integrates the collection of both water quality and quantity data. Hydrometric data are collected through an agreement signed in 1975 between DIAND and DOE. Water quality data are collected through an agreement signed by DIAND, DOE and the Government of the Northwest Territories (GNWT) in 1995.

The Department of Environment Water Survey of Canada employees operate and maintain hydrometric stations that measure water levels and stream flow. The use of Water Survey of Canada personnel is particularly important in obtaining dependable hydrometric information. DOE has the expertise to manage a highly technical program, especially in northern Canada where access is by small aircraft and the climate is not conducive to reliable operation of instruments. For cost efficiency, many of the water quality monitoring stations are located at or near hydrometric stations. Water Survey of Canada personnel can therefore collect water samples on a frequency of about three to four times per year while on routine operation and maintenance checks. The hydrometric network is shown in Figure 4.

Water quality samples are analysed at the DIAND laboratory in Yellowknife for physical parameters, bacteria, metals, nutrients, major ions, and some organic compounds. Baseline work occasionally includes organic contaminants that could have entered the Arctic by long-range transport. The DIAND-led Northern Contaminants Program has also undertaken extensive monitoring for persistent organic pollutants (POPs).

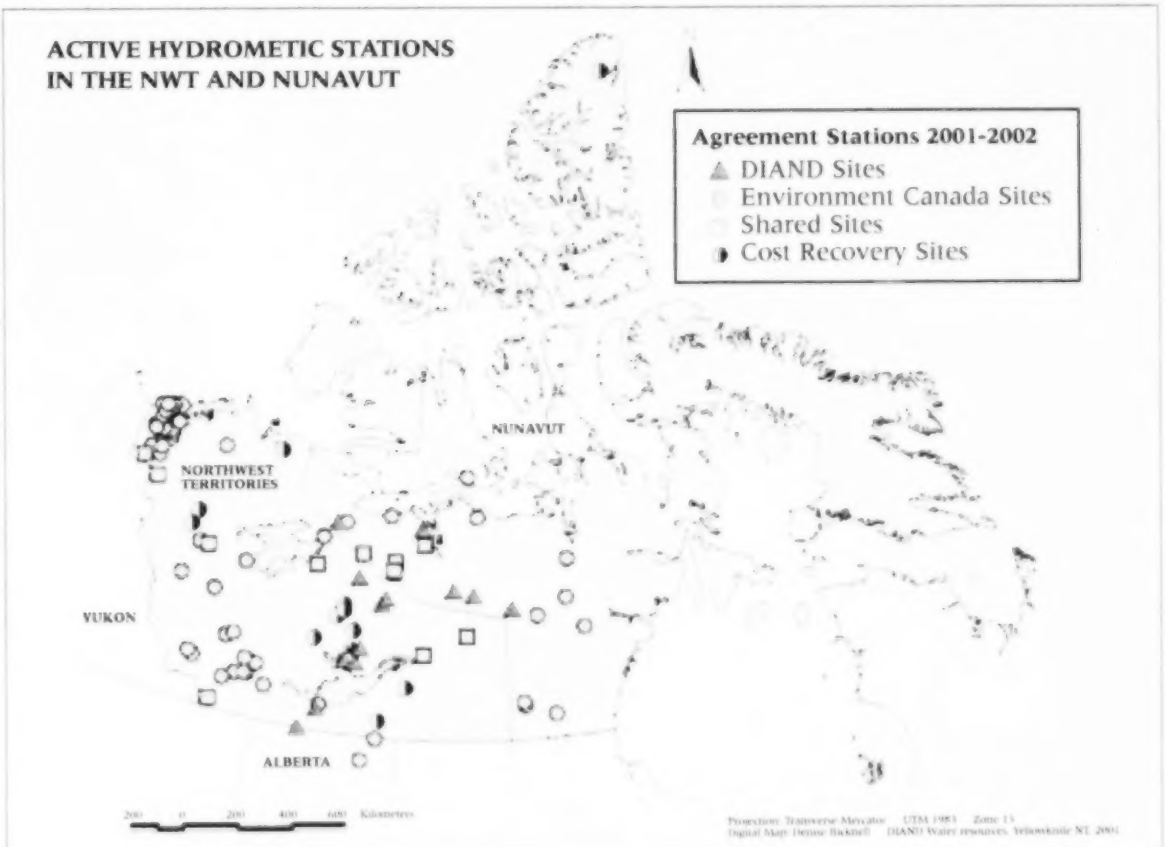

Figure 4. Active Hydrometric Stations

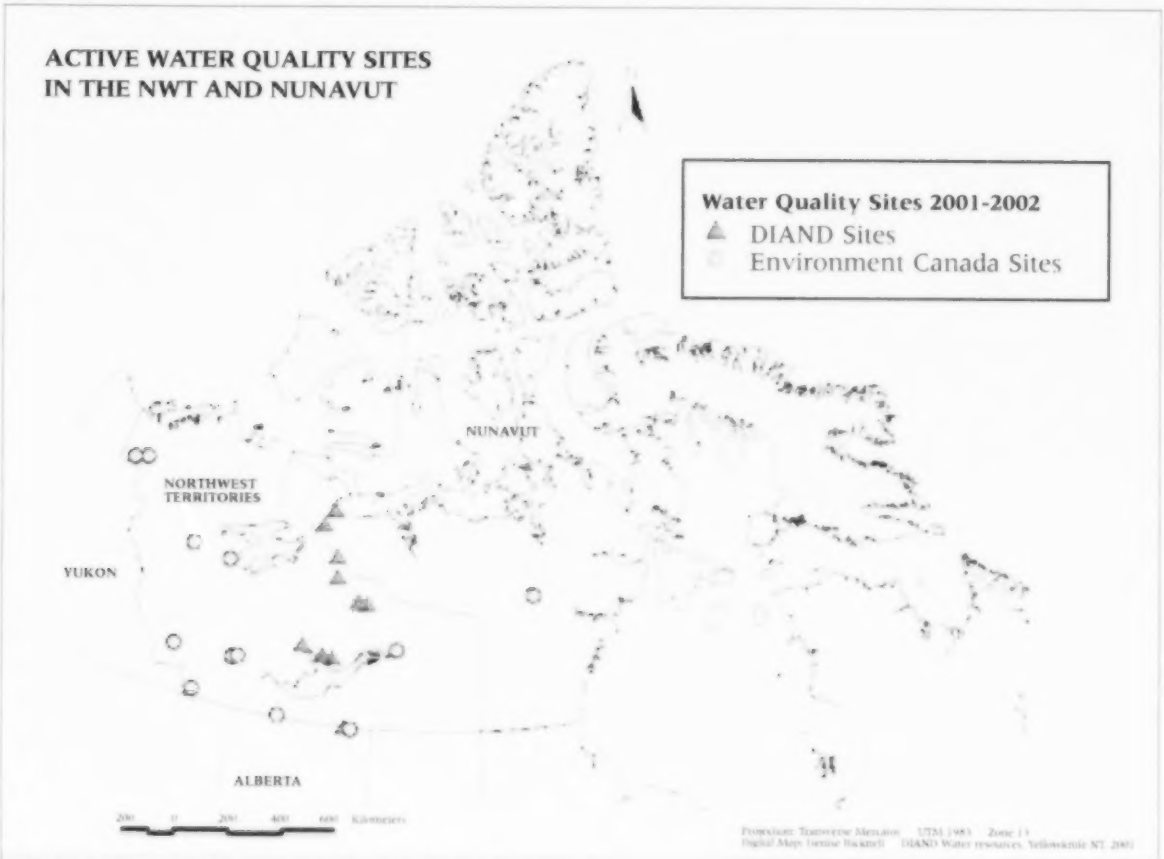

Figure 5. Active Water Quality Stations

The water quality network is shown in Figure 5. In 1999 water quality samples were collected at 18 of the network stations. Because of decreases in resources, in 2000 water quality sampling locations were restricted to a few areas affected by resource development.

Data collected though the network are used to determine natural conditions and to assess th impacts of potential water uses such as mining, oil and gas operations, hydroelectric development, transportation, municipal and domestic uses. Stream flow and water level information and data can be used for spring flood forecasting. To deliver reliable information and advice to our clients, the network needs stability, which can only be achieved through a long-term (10-20 years) commitment to data collection.

In 2001-2002, the combined DIAND/DOE network includes 78 stations which monitor 3 million square kilometres of water basins (Table 1). In addition to these, 22 stations are funded by dedicated resource users (e.g. hydro power and mining). The main users of hydrometric data are:

- the Department and other government departments;
- the Canadian Coast Guard;
- industries including power, transportation, oil and gas companies.

Station Designation	Number of Stations in 2001-2002
Federal (DOE)	**55**
Federal/Territorial (DOE/DIAND)	**11**
Territorial (DIAND)	**12**
Cost Recovered from Other Users	**22**

Table 1: Breakdown of Hydrometric Stations by Funding Source

The Northwest Territories hydrometric equipment is fully modernized, and as such, is able to take advantage of all the efficiencies associated with the most current technologies. The hydrometric network today, however, represents a reduction in stations of over 50% from 1974. In addition, there are now gaps in the network caused by rising operating costs, particularly air charter access to the remote sites.

Recent monitoring efforts have concentrated on collecting information on the Mackenzie and Coppermine River Basins because of emerging northern resource development trends such as new diamond mines, oil and gas development and the construction of a pipeline.

3.3.2 Specific Water Monitoring Studies

Specific water monitoring studies are conducted to answer questions about water quality or hydrology. The questions can focus on a specific reach of a river or lake or address questions about a whole watershed. Studies are often triggered by questions from northerners about potential impacts from contaminant sources on their health through the water they drink and the fish and wildlife they eat. Such specific water monitoring studies complement studies conducted under the Northern Contaminant Program (NCP). Specific water monitoring studies have often been closely linked to the NCP as both address concerns about the health of people and of ecosystems. The relationship between the two different programs is one of collaboration. For example, if the NCP conducts a study on specific contaminants in the Peel River, the Water Resources Division will provide support to the NCP by collecting water or sediment samples while conducting scheduled sampling for transboundary monitoring.

Water is not the only sample media characterized; sediments and other components of the aquatic ecosystem such as fish and benthic invertebrates are sometimes sampled and analysed because they accumulate contaminants that are otherwise difficult to detect in water.

Monitoring studies are also conducted to improve the understanding of water resources in order to better predict and appreciate the implications of development in a basin. DIAND also undertakes studies to determine water balance in lakes and river basins. This requires information on snow accumulation and on evaporation which are obtained from a snow survey of 39 stations and a small meteorological network including 8 stations. Evaporation studies help answer questions related to mine site water management, mine abandonment and reclamation. The knowledge gained through these studies is used in the planning of the ***Water Quality/ Quantity Baseline Network***.

3.3.3 *Applied Research*

A few studies that support water resources management in the North are conducted each year through the Department's Northern Water Resources Studies Program (NWRSP). The objectives of the NWRSP are to advance our knowledge of northern water science, aid in regulatory decision-making and assist in water policy analysis. Examples of studies under this program include the development of mine site reclamation models, and abandonment and restoration guidelines. A study was conducted on waterborne *Giardia* and potential human health effects, which contributed to changes in the design of sewage treatment plants. Another study conducted on the levels of mercury in fish from rivers and lakes in Southwestern Northwest Territories provided data that showed that mercury concentrations in fish tissues in the studied species from those waters were within acceptable levels for safe human consumption.

The NWRSP has been highly effective in fostering cooperative studies with clients such as the mining industry, municipalities and aboriginal organizations to address water related concerns. More specifically, the program provides technical and scientific information that can reduce the Crown's environmental and financial liability.

The program is effective in drawing in other government agencies and non-government organizations (NGOs) to co-fund various studies. In addition to financial assistance, many clients, NGOs and government agencies (e.g. municipalities) provide support to the program with services in kind that include taking samples, technical advice and support, laboratory support or peer review.

3.3.4 *Interpretation of Results*

An integral component of any data collection program is the analysis and interpretation of results. In all areas of water monitoring, this component is often the weakest. Long and short-term data need to be compiled and assembled in a usable format, checked for errors and analysed to determine trends in water quantity or quality, address specific questions about the state of water resources in the Northwest Territories and Nunavut and fulfill DIAND's water-related obligations under a number of land claim and transboundary water management agreements. DIAND is also, in this case, a client for this information for resource management and policy decisions, including use in environmental assessments, water license interventions, compensation issues etc. Some work has been undertaken recently to improve this important component of water monitoring including the development of a water quality database.

3.3.5 *Partnerships and Public Participation*

The level of public awareness about water problems is increasing. Land claims agreements, environmental assessments of resource development projects and water license hearings have created heightened environmental awareness from industry, aboriginal organizations, government departments and agencies, non-governmental organizations and the public. As the water manager in the Northwest Territories and Nunavut, DIAND is mandated to deliver water information. Although all water monitoring data and information are available to the public upon request from DIAND, budget cuts have reduced the ability of the department to disseminate water data and information to our clients. Resources are being directed to improving and maintaining a website and various databases so information is available and accessible to our clients.

DIAND Water Resources staff maintain close ties with communities and other clients and, whenever possible, respond quickly to any concerns related to water. Visits are made to communities and public meetings are held to answer questions and provide advice as required. The community level approach to the relationship strengthens the partnership between DIAND and its northern clients.

3.5 Risks and Benefits

There are many risks associated with a responsible authority not knowing enough about its water resources. Examples of these risks are:

- increased environmental liabilities for the federal government from inappropriate mitigation plans;
- increased financial liabilities from insufficient security deposits;
- health issues from contaminated water supplies and country foods;
- safety issues from lack of information to support flood warnings;
- inadequate designs for transportation, hydroelectric or mining projects; and
- increased cost to industry for over-designing structure and treatment systems.

Potential losses in development opportunities as a result of delayed or incomplete assessment of proposals from the lack of water information could have significant effects on local and regional economies.

On the other hand, there are significant benefits of knowing enough about our water resources. These benefits include the following:

- adequate water supply and wastewater disposal for communities;
- safe and efficient ground transportation, construction of stable ice bridges and prevention of culvert wash outs from design based on sufficient data;
- dependable transportation of goods by barge on the Mackenzie River – unpredicted low water levels and consequent delays results in costs to communities for supply and industrial activities;
- preservation of important fish habitat;
- adequate engineering designs for tailing ponds or other structures;
- adequate assessment and preparation for man-made dams and other structures or environmental (e.g. climate change) changes
- reduced risk to human safety and property from floods;
- information available to address community concerns about the quality of drinking water and fish; and
- effective regulatory system based on understanding of the resources that allows sustainable development.

4. STRATEGIES TO MEET THE CHALLENGE

Our departmental mission and values and our clients' needs are the last but not least two aspects we will consider before setting strategic goals and strategies.

4.1 Mission and Values

Our water management business operates within the larger framework of DIAND's mission:

"Working together to make Canada a better place for First Nations, Inuit and Northerners."

DIAND responsibilities north of sixty are delivered primarily through the Northern Affairs Program which falls into two key areas: 1) supporting northern political and economic development through the management of federal interests and 2) promoting sustainable development of the North's natural resources. Water monitoring is a key activity for knowing the water resource and promoting its sustainable use.

Water monitoring also supports overarching departmental strategies such as Gathering Strength, a very important strategy to renew the relationship with the Aboriginal people, and the DIAND Sustainable Development Strategy.

4.2 Clients and Needs

The users of water monitoring data are numerous and diversified. They include:

- Nunavut Water Board, Mackenzie Valley Land and Water Board, and Northwest Territories Water Board
- Land use planning, environmental assessment and other public boards
- DIAND natural resources planning, management and regulatory processes
- Governments of Northwest Territories and Nunavut
- Public and environmental groups
- Aboriginal self government, land claims and other organizations
- Industry (fishing, trapping, mining, petroleum, tourism, transportation)
- Other federal and provincial/territorial government departments (e.g. Fisheries and Oceans, Environment Canada, Alberta, Yukon)

All of these clients need tools that will help them prepare for the increase in resource development in the North. These tools include adequate water quality and hydrometric data, participation in the process of obtaining the data, and access to interpretation of the data that makes sense to them so that they can relate it to their specific interests and needs.

4.3 Strategic Goals

Considering the expected opportunities and challenges described in the previous sections, the DIAND mission and values and clients' needs, the strategic goals for the water monitoring program are:

- Renew and Expand Partnerships
- Support Healthy Communities
- Obtain Sufficient Knowledge of Water Resources
- Use Monitoring Data Better
- Improve Efficient/Effective Delivery of Monitoring Activities

The following section describes the strategies that will be used to reach each of these strategic goals in the delivery in our business lines. The strategies are summarized in Table 2.

4.3.1 Strategic Goal # 1: Renew and Expand Partnerships

This goal is about renewing our relationship with our Aboriginal partners, a key element of the department's Gathering Strength Initiative, and our partnerships with our other clients.

Strategies:

1. Through our ***Partnerships and Public Participation*** business line, needs and expectations of our Aboriginal and other partners will be identified.

2. Though our ***Water Quality/Quantity Baseline Network*** business line, the participation of Aboriginal and other partners in network planning will be increased.

3. Through our ***Interpretation*** business line, Aboriginal and other partners will be involved in development of interpretative reports.

4.3.2 Strategic Goal # 2: Support Healthy Communities

This goal complements goal #1 and is at the core of why we are in the monitoring business.

Strategies:

The first three strategies fall under the ***Specific Water Monitoring Studies*** business line:

1. The consideration of cumulative aquatic effects in areas of multiple development will be addressed.
2. The focus of studies on community concerns and the use of ecosystem based monitoring will be increased.
3. The link between the Northern Contaminants Program and the ***Specific Water Monitoring Studies*** will be strengthened.

Three strategies fall under the ***Water Quality/Quantity Baseline Network*** business line:

4. The goal of supporting healthy communities as a priority in developing the network will be maintained.
5. Our support of healthy communities is realized by using the results of specific water monitoring studies conducted in response to community concerns, and continued improvement and maintenance of the network.
6. Our collection of data supporting the environmental assessment processes to protect the quality of the environment and people's health and safety will be maintained.

One strategy falls under the ***Applied Research*** business line:

7. Focus on communities' drinking water and sources.

The last strategy falls under the ***Interpretation*** business line:

8. Increased certainty about the quality of drinking water will be provided by developing water quality indices, thereby facilitating interpretation of water quality data.

4.3.3 Strategic Goal # 3: Obtain Sufficient Knowledge of the Resource

This is our main goal affecting day-to-day operations.

Strategies:

The first 5 strategies fall under the ***Water Quality/ Quantity Baseline Network*** business lines:

1. Hydrometric stations will be maintained to address: (i) transboundary issues at land claims boundaries; ii) resource development; and (iii) the objectives of the Mackenzie River Basin Transboundary Waters Master Agreement.
2. Improvement in strategic location and monitoring of more parameters of ambient water quality will be considered for hydrometric stations.
3. Long term data collection to contribute to understanding the effects of climate change will be maintained.
4. To prepare for the assessment of development proposals in the high potential areas of the Central Arctic and the Keewatin, the monitoring in these high priority areas will be increased as resources become available.
5. Complete the assessment and clean-up of all hydrometric stations where there was potential for mercury spills from the old equipment.

The next 2 strategies fall under the ***Specific Water Monitoring Studies*** business line:

6. The issue of cumulative aquatic effects in areas of multiple development will be addressed.
7. The focus on community concerns and the use of ecosystem based monitoring will be increased.

The last 3 strategies fall under the ***Applied Research business*** lines:

8. Studies conducted will have a greater focus on mineral and oil and gas development.
9. Studies conducted will have a greater focus on supporting efficient regulatory processes.
10. The use of ecosystem indicators and models will be increased.

4.3.4 Strategic Goal # 4: Use Monitoring Data Better

Strategies:

1. Through our ***Interpretation*** business line, an interpretive water information system is being developed. For example, water quality indices will be developed for specific basins to facilitate monitoring of impacts from developments.

2. Through our ***Partnerships and Public Participation*** business line, the dissemination of information to Aboriginal organizations and the public will be improved.

4.3.5 Strategic Goal # 5: Maintain Efficient/ Effective Delivery

Although an efficient delivery system is already in place, strategies will be used to maintain and further improve efficient and effective delivery in all our business lines.

Strategies:

Strategies to help maintain and improve delivery in the ***Water Quality/Quantity Baseline Network*** business line:

1. The annual network evaluation process will be maintained.

2. Regular equipment updates will continue.

3. A focus on obtaining real time data will be continued and used where feasible.

Strategy to maintain and improve delivery in the ***Specific Water Monitoring Studies*** business line:

4. The advantage of inter-agency and intergovernmental cooperation and joint projects will be further sought.

Strategy to maintain and improve delivery in the ***Applied Research*** business line:

5. The Northern Water Resources Studies Program will be maintained and expanded as resources become available.

Strategies to maintain and improve delivery in the ***Partnerships and Public Participation*** business line:

6. The participation of all stakeholders in addressing water monitoring issues will be increased.

Strategies to maintain and improve delivery in the ***Interpretation*** business line:

7. A self-assessment and feedback process will be put in place.

5. CONCLUSIONS

Our assessment of where we are today compared to where we want to be in the next five years led us to adjust existing goals and set new goals and objectives for collecting water information. These strategic goals are to renew and expand partnerships, support healthy communities, obtain sufficient knowledge of the resource, use monitoring data better and improve efficiency and effectiveness in water monitoring program delivery.

Progressive down-sizing of monitoring programs over the last 10 years has reduced DIAND's capacity to carry out monitoring of water resources in the Northwest Territories and Nunavut. The trend toward increased water use and waste disposal combined with higher expectations on the number and sophistication of outputs from the water monitoring programs will continue to impact our ability to meet client needs.

This business plan is a tool to ensure clients' needs are met to the best of our ability with the financial and human resources available for this work. It will be reviewed and updated periodically to meet the ever evolving needs of Northern water management. The next step is to ensure that the operational plans for water monitoring in Northwest Territories and Nunavut translate these strategies into specific and measurable actions to reach our goals.

STRATEGIC GOALS					
BUSINESS LINES	**Renew Partnerships**	**Support Healthy Communities**	**Obtain Sufficient Knowledge of the Resource**	**Use Monitoring Data Better**	**Improve Efficient/Effective Delivery**
Water Quality/ Quantity Baseline Network	• Increase partners' participation in planning	• Consider priority for planning • Improve network with studies • Maintain capacity for EA	• Maintain for transboundary • Maintain for climate change • Focus on Central Arctic and Keewatin • Clean-up of stations • Improve strategic location of stations		• Evaluate annually • Upgrade equipment • Focus on real time data
Specific Water Monitoring Studies		• Address cumulative effects • Focus on communities and ecosystems • Strengthen link with NCP	• Address cumulative effects • Focus on communities and ecosystems		• Seek more inter agency links • Maintain
Applied Research		• Focus on communities and drinking water sources	• Focus on mineral and oil and gas development • Focus on regulatory • Use ecosystem indicators and models		
Partnerships and Public Participation	• Identify partner needs and expectations			• Improve dissemination	• Involve all stakeholders
Interpretation	• Involve partners in end products design	• Develop water quality indices to give certainty		• Implement interpretive system	• Use self-assessment and feedback

Table 2. Strategic Goals Summary

FEEDBACK TO THE WATER MONITORING BUSINESS PLAN

We invite clients and readers to send their comments on this business plan and DIAND's water monitoring activities in Nunavut and the Northwest Territories to:

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